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Big Sky
Clearwater

Fall 2000
Volume XXX, Issue 2

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Reflections in the Ripples

Welcome to the Summer 2000 edition of the Big Sky Clearwater. We have taken a new approach to this issue in formating this publication as a newsletter, rather than the journal format used for many years. In a way, we're returning to our roots; the original Big Sky Clearwater publications came out on a quarterly basis and were in newsletter style. The information was timely with regard to the many activities happening around Montana. We currently aren't proposing to develop this into a quarterly publication, but I think we've included a great deal of information into this style. We think you'll find it useful and readable. Let us know what you think. The Big Sky Clearwater has always been for the operators and managers of water and wastewater systems in Montana, and we'd like to provide you with a quality publication. Your feedback and ideas for articles will be essential for this effort to succeed. Thank you, Bill Bahr.

First and Foremost: Work Safely

By Bill Bahr

An employee who is injured or killed will not make the job more cost-effective. In spite of safety education and increased awareness about hazards, reports of job assignments and job conditions that lack proper safety considerations are increasing. I've had the good fortune to facilitate safety seminars for water and wastewater professionals for the past twenty years and these folks fire my enthusiasm for safety and health programs. When I visit a facility and see the same faces year after year, I know they have survived some dangerous situations. The facilities we work in aren't necessarily safer because we have new policies and equipment. Those things help, but our jobs are still extremely dangerous. Safety must never take a backseat to efficiency, cost-effectiveness and chain of command. Safety programs and workplace morale will suffer if plant staffs feel endangered and their concerns ignored about workplace safety. (They will resent the imposition on their lives.) Complacency by management and apathy by the staff are the easiest ways to destroy a safe working environment.

In Montana, workers in public utilities can rely on the Department of Labor & Industry's Safety Bureau (444-6401) to provide technical assistance, safety inspections and safety training. The Occupational Safety and Health Administration (OSHA) has authority over private industry. *(continued on next page)*

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Big Sky
Clearwater

Volume XXX, Issue 2
Fall 2000

Big Sky Clearwater, a publication of the Department of Environmental Quality, is for water and wastewater operators across Montana. The Department welcomes articles of interest and suggestions for articles related to water quality, water and wastewater treatment and the water environment from the general public of Montana. If you have information or ideas you would like to share with other professionals involved in the water and wastewater field, please contact DEQ at 406- 444-6697 or write to:
Editor, Big Sky Clearwater
Department of Environmental Quality
Metcalf Building
PO Box 200901
Helena, MT 59620-0901

Articles may consist of your thoughts or ideas about treatment plant experiences, technical papers or any information that may benefit other operators or managers. Please submit articles 30 days before publication (August 1 and February 1).

Big Sky Clearwater is published twice a year by the Planning, Prevention and Assistance and Permitting and Compliance Divisions of the Montana Department of Environmental Quality in cooperation with the Montana Water Environment Association and the Montana Section of the American Water Works Association.

Editors:
Bill Bahr
Deb Williams

(continued from previous page)

OSHA has the lead role in developing and enforcing safe workplace practices and procedures. The Safety Bureau reviews OSHA safety regulations and modifies and adopts appropriate rules for Montana's public employees.

No job is worth injuring workers. Safe work practices have changed since I started at the Great Falls WWTP in 1980. Entering the wetwell of submersible pump stations to perform routine maintenance without protection is unthinkable today in light of current rules and current understanding of the dangers inherent in such situations. Today we understand that confined spaces represent serious threats to life. Accepted work practices of years past must be reviewed and changed if they are unsafe. Acceptable safety policies **must** be developed for chemical handling, laboratory practices, ladders, lifting, power tools, electrical equipment, health and hygiene, welding and brazing, trenching, and other jobs. Protections for plant staff and the general public must come first. In this case, pretty good is just not good enough.

Every facility and every employee must strive for a zero accident safety record. We become accustomed to our working environment and take chances we would never allow our loved ones to take. We are valuable to them, too, so why do we think we can survive in toxic atmospheres? Does our knowledge of our plants make us more able to withstand crushing weights and crashing blows? What about our ability to survive falls from high places, slips and trips on slippery or awkward surfaces, or electrocution? It is a curious phenomenon that long-time employees are among the most often injured workers. Apparently, we become more vulnerable as we become more familiar with our workplaces. We come to ignore situations that seem threatening on the first day on the job. Question the situation. Do you really want to change that fuse while standing on a wet floor? Do you really want to sniff that unmarked container to find out what's in it?

It is the duty of workers to perform their duties safely. Individual responsibility for working safely has been the cornerstone of safety awareness and active participation in safety programs has been crucial to creating safe workplaces. However, this disturbing trend to ignore safe practices and worker concerns while focusing on expediency because we have succeeded in making the workplace safer, will, in the end, result in accidents. If, as in the old days, safety once again becomes an afterthought, or even annoyance, we will have trouble.

Safety programs provide a level playing surface for all employees, from top to bottom. Nobody gets to break the rules. All employees must be included in developing and instituting safe policies. State and federal agencies work to ensure that all workers know their rights. We understand better than ever the dangers that exist in collection and distribution systems. The hazards in water and wastewater treatment plants are well documented. We cannot ignore protections for employees. **All workers are guaranteed a safe working environment.**

New Public Water Supply Regulations

By Jim Melstad

In order to maintain primacy for the Safe Drinking Water Act (SDWA), the Montana Department of Environmental Quality (DEQ) has to adopt regulations that are at least as stringent as the Environmental Protection Agency (EPA) regulations. The 1996 amendments to the SDWA required EPA to adopt numerous new public water supply regulations. DEQ had to decide whether to write new state regulations to match the EPA regulations, or to adopt the new regulations by simply referencing them.

In order to adopt these rules in an efficient manner, DEQ has decided to adopt the federal rules by simply referencing the federal rules. However, DEQ must first repeal *existing* state rules and then the corresponding federal rules. This will allow DEQ to adopt future federal rules without having conflicts or a lack of continuity between the existing state rules and the new federal rules.

Water suppliers will soon receive a rule proposal from DEQ that would repeal existing state rules and adopt the corresponding federal rules. Additionally, the proposal would adopt these four new EPA regulations: (1) The Interim Enhanced Surface Water Treatment Rule (IESWTR); (2) The Disinfection/Disinfection By-Products Rule (D/DBP Rule); (3) The Consumer Confidence Report Rule; and (4) New requirements for variances and exemptions.

This rule proposal, mailed to water suppliers in early August, will contain an explanation of the various rule changes. A hearing will be held in room 111 of the Metcalf Building, 1520 E. Sixth Ave., Helena at 10 AM on Tuesday, August 29. If you have any questions, please call Jim Melstad at the Public Water Supply Section (444-5315).

Controlling Weeds and Lagoon Maintenance

Weeds must be controlled at lagoon wastewater treatment facilities. Depending on the type of plant, e.g., cattails, grasses, noxious weeds, etc., different problems will result from the proliferation of weeds along lagoon dikes. All plant growth on dikes should be cut or removed to a few inches in height. This helps operators protect the dike from erosion and aids in inspection and maintenance of the dike. Operators must prevent animals from burrowing into dikes and watch for cracks that may develop. Valves, vaults and control structures should be easy to access and maintain. Plants, holes, erosion and cracks can lead to leakage through the dikes and bottom of the cells or complete failure of the lagoon.

Excessive plant growth in the lagoon water will encourage the build up of scum mats. Scum mats are made up of floating material from the collection system, like grease and plastics, and often create offensive odors. Flies, mosquitoes and other pests can breed and multiply in scum mats and transport diseases from the lagoon to people, pets and other living creatures. Scum mats block wind and wave action, as do extensive weed populations, inhibiting mixing, aeration and treatment. Scum mats can be removed easily by periodic skimming of the floating material in the downwind corner of the lagoon cells and by raking it from the lagoon dikes.

There are several strategies in use for controlling and removing various types of weeds. Weeds can be burned, pulled, sprayed and cut, along with other noninvasive, nondestructive alternative controls, like allowing sheep to graze on the land. Safety precautions must be adhered to regardless of the method used.

Application of herbicides and pesticides to control plant growth at lagoons can be effective, but these rules must be followed:

- The chemical applicator must have a current certified applicator's license from the Montana Department of Agriculture. Contact the Agricultural Sciences Division at 444-5400.
- The chemicals used on the inside of the lagoon dikes must be suitable for waters used for irrigation. Please contact the Weed Specialists at the Department of Agriculture, your local USDA Soil Conservation District offices or MSU Extension Services for guidance on selecting the appropriate weed control chemicals.
- Coordinate the weed control efforts at your lagoons with those of your respective County Weed Control Districts. Often they will include the exterior banks of the lagoon dikes and the lagoon site in the district weed control program in order to coordinate eradication efforts against noxious weeds.

PLEASE DO NOT APPLY CHEMICALS TO THE LAGOON WATERS!

Small System Alternate Filtration Technology

By Rick Cottingham, DEQ Water Quality Specialist

Understanding that a filter is designed to remove particles is the fundamental factor in operating a filtration system. It is important for operators to understand how to measure turbidity, how filters work and when to change them, and the recommended filtration and disinfection components. Following is an explanation of these basics of operation.

Measuring turbidity:

The Surface Water Treatment Rule requirement states that "filtered water must be less than or equal to 1.0 NTU" for other filtration technologies. NTU stands for Nephelometric Turbidity Unit and is a measure of the amount of turbidity (suspended particles) in a water sample. Drinking water sources using this technology range from 10 NTU for relatively dirty water to below 0.1 NTU for filtered water. Alternative Filtration Technologies must be less than or equal to 1.0 NTU in at least 95% of the measurements taken each month. Therefore, it is important that surface water systems have the capability to measure the turbidity of the water.

Virtually all large surface water systems use turbidimeters to continually monitor turbidity of raw and finished water. Turbidity is measured with an electronic instrument called a turbidimeter. A turbidimeter shines a light through a water sample and measures the shadow (reflection) of the particles in the sample. Turbidimeters range in cost from $900 for a portable, grab sample turbidimeter to over $2,500 for an in-line unit that continuously monitors turbidity.

A portable turbidimeter can be used to sample both raw water turbidity and filtered water turbidity. The advantages of portable turbidimeters are that technical background for operation is not required and they cost less. The disadvantages are that they are small, expensive and easily dropped or stolen.

An in-line turbidimeter measures turbidity constantly; data can be sent to a computer for printing and analysis. The advantages of an in-line turbidimeter are that no expertise is required to measure the sample and it is mounted permanently on a wall, making it unlikely to be stolen. The disadvantages of an inline turbidimeter are that it can only be installed in one location and is more expensive than portable units.

How filters work:

Filters are used to consistently remove. When water goes through the filters, particles get trapped in the fabric. As more particles get trapped in the filters, less water can flow through. Eventually the filters must be replaced.

Most of the alternative technologies employed in Montana public water systems use disposable filters. Some systems use several filters, each with a different nominal size rating. These size ratings are often measured in microns. One micron is equal to one one-thousandth of a millimeter. Remember that microorganisms like *Giardia lamblia* can be as small as 7 microns and *Cryptosporidium* as small as 3 microns. So the smaller the nominal size rating, the more effective the filter is at removing these tiny particles.There are both roughing and finished or polishing filters. Typically, the roughing filters are used to remove larger particles, and often cost less than the smaller micron polishing filters. Roughing *(continued on next page)*

Upcoming Events

Fall Water School
September 25-28, 2000
Strand Union Building
Montana State University-Bozeman, MT
See page 16 for schedule of events. For more information:
MSU-Bozeman Office of Extended Services
POBox 172200
204 Culbertson Hall
Bozeman, MT 59717-2200
Phone: (406) 994-6683
Fax: (406) 994-6546
e-mail: outreach@montana.edu

Math Review for Certification Exam (See page 15)
September 28, 2000
Thursday 1:15 - 4:30 pm
Montana State University
Strand Student Union Building
Bozeman, MT
For more information call
Reta Therriault, DEQ
(406) 444-3434

Fall Water & Wastewater Exams
Friday, September 29, 2000
MSU-Strand Union Building, Bozeman, MT
Registration @ 8:00 a.m.
Examination Period:
8:30 a.m. – 12:30 p.m.
Contact Reta Therriault (above) for more information. (Application on page 17.)

Spring Water & Wastewater Exams
March 24, 2001
To receive application information call:
Reta Therriault, DEQ
(406) 444-3434

(continued from previous page)
filters are designed to reduce the number of large particles that reach the finished filters. By removing all but the smallest particles, roughing filters prolong the life of the finished filters.

Because every source of water is different, different filter combinations are used in systems. Changes in seasonal water quality complicate treatment. For example, temperature changes cause changes in the density of water, making it turn over. Algae blooms can occur, causing increased loading on filters which reduces their operational life. Heavy rains can wash sediment into the water, adding particles that reduce filter runs. Wind or storm activity can stir up bottom sediments, causing increased turbidity and bacterial loading. Each system must be carefully evaluated to determine the best combination of roughing and finished filters.

When to change a filter:

Filters are designed to remove particles from water. Manufacturers test the filters to predict the operating life under a given set of water quality parameters. As water requires more force to go through the filter, it builds up a pressure differential that can be measured with pressure gauges. For instance, when installing a clean filter, the pressure is read before and after water goes through the filter. If the pressure before water goes through the filter is 50 psi and 30 psi after filtering, there is a pressure differential of 20 psi. Over time, particles accumulate in the filter and the pump needs to exert more force to get water through fewer openings. Therefore, the pressure before filtering may rise to 60 psi, and 30 psi after filtering, equaling a pressure differential of 30 psi. If your filters are designed to be changed at 30 psi, then they're "full" and need to be changed.

Why you should change filters:

Failure to replace the filters when they are due to be changed can cause problems. Pressures could increase so much that bag filters are overwhelmed and "blow out," rupturing like an overfilled balloon. This can cause particle breakthrough and allow all of the trapped particles to go into the next filter or into the water system. Without pressure or turbidity alarms, it would be too late to shut down the system and consumers may drink the most dangerous particles.

How to prevent failure:

It is highly unlikely that filters will fail if they are designed properly, if pressure is monitored carefully, and if turbidity levels are met. Filters require careful attention if they are to work properly. Some systems change out filters on a routine basis to avoid turbidity problems and reduce maintenance.

Alternative Filtration Technology

The following lists indicate features of an Alternative Filtration Technology that Drinking Water Program engineers look for during plan review and field inspections. Some recommendations below may not be applicable to all systems.

Recommended filtration components:

1. Screened intake
2. Pump for pressurizing the water from the intake to the filters
3. Roughing filters for removing large particles
4. Finishing filters for removing smaller particles
5. Extra filters that are clearly labeled
6. Gauges to determine head loss across filtration components
7. Turbidimeters to measure the amount of particles in water
8. Raw water taps
9. Filtered water taps
10. Shut off valves for changing filters and performing routine maintenance
11. Metering devices to determine how much water is going through the filters
12. Daily logs to record operation times, turbidity and disinfection results
13. Operations manuals provided by the engineer who designed the system

Recommended disinfection components:

1. At least one chemical feed pump for injecting disinfectant into the filtered water with a spare pump or parts inventory should the primary system fail.
2. Chemical storage drums w/ secondary containment
3. Chemical safety handling equipment (eye protection, rubber apron, eye wash and gloves)
4. Approved disinfectant residual measuring kit
5. A way to pace disinfectant to flow
6. Contact tanks for storing disinfected water
7. Blow-off lines to drain or flush the contact tank
8. Finished water taps after the contact tank
9. Screened vent/overflow on the contact tank
10. Finished water pumps/pressure tanks

Drawdown Testing: Saving Well Pumps

By Rick Cottingham, DEQ Water Quality Specalist

As Montana goes through another hot and dry summer, public water systems across the state are showing signs of stress. Many people don't believe there is a water crisis at hand! We recently visited a city where pumps from both of the city wells were surging; that is, alternating between a pumping rate of zero and 600 gpm on a cycle of about 10 seconds. That's right, they would pump air for five seconds (zero flow) and then pump 600 gpm for five seconds. What odds would you give, had this not been detected, for the life expectancy of these pumps? What was causing the surging? Due to unusually high water usage from both inside and outside the city, from both city wells and several large irrigation wells, the water table serving these wells was being drawn down to all time low levels, thus causing the surging.

We don't yet have the means to make it rain or to prevent farmers from irrigating, which I don't believe any of us want to do anyway. However, we can help protect valuable city pumping equipment by running periodic pump draw down tests on community wells. DEQ staff has explained this in operator training for many years, and continue to emphasize this strategy to the new "operators in training". Performing this draw down test allows operators to track local water table levels to see if they are dropping close to the recorded pump setting. If necessary, a pump installer can lower the pump. Of course, there might be situations where the pump setting can't be changed. Should that arise, a voluntary water conservation plea should be issued to the consumers in order to provide enough water for domestic use and maintain water for fire protection.

The drawdown test procedures are as follows: To run a draw down test on your wells, look for a pipe coming out of the well casing that has a pressure gauge and an air valve attached. This pipe is attached to a tube, which should extend to a point either five feet above or below the pump. You must know how long this tube is. For some of you, this may require a lot of digging through old records. For a few of you, unfortunately, this line may have been cut off when the pump was repaired last. In this case the line will have to be replaced. The next step is to use a tire pump or an air tank and to put air into the tube until the pressure stabilizes. Now, you need a gauge that reads in feet of water; subtract the gauge reading from the total length of the tube. If the gauge is calibrated in pounds per square inch (psi), then multiply the reading by 2.31 (ft/lb) and subtract this number from the total length of the tube. The end result is the distance from the top of the ground to the top of the water. You may notice that the gauge pressure may drop as the pump is operated. This indicates the normal drawdown associated with pump operation; the pressure should stabilize in a short time.

In order to determine how your water supply is holding out, this test should be done frequently during the hot, dry weather and more often as your water level drops in relationship to the pump. If you notice a declining water level trend, contact the Public Water Supply Section at 406-444-4400 in Helena, 406-247-4445 in Billings, or 406-755-8985 in Kalispell for assistance, in addition to taking other water conservation measures.

(Partial Reference: Water and Wastewater Digest 1988)

Upcoming on the METC Calendar

For more information contact METC at 771-4433 or 771-4432

10th Annual Advanced Wastewater Training-METC
August 29-31, 2000
Yellow Bay

Wells: Source Water Protection-MRWS
September 12, 2000
Havre, MT
September 14, 2000
Helena, MT

Small Water & Wastewater System Operations-METC
October 11-12, 2000
Shelby, MT

Montana League of Cities & Towns Annual Conference
October 11-13, 2000
Missoula, MT

Filter Plant Optimization Using Microscopic Particulate Analysis-METC
October 17-18, 2000
Billings, MT

Water & Wastewater Systems: Beyond Operation & Maintenance-METC
October 25-26, 2000
Missoula, MT

Meter/Flow Measurement-MWRS
October 24, 2000
Malta, MT
October 26, 2000
Cut Bank, MT

Communication Skills-METC
November 1, 2000
Great Falls, MT

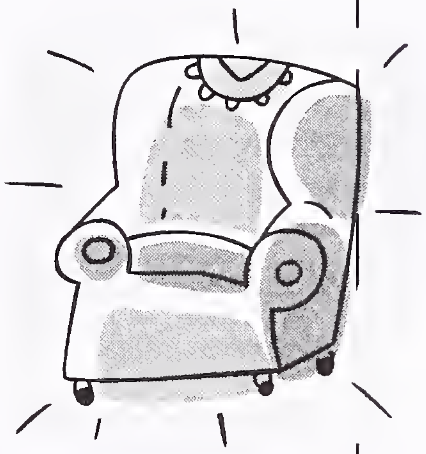
Understanding Ground Water & Contamination-METC
November 9, 2000
Kalispell, MT

Advanced Wastewater Lab-METC
November 14-15, 2000
Havre, MT

Telemetry Control Systems-MRWS
November 14, 2000
Libby, MT
November 16, 2000
Missoula, MT

Greetings from New MSAWWA Chair

by Bev Young



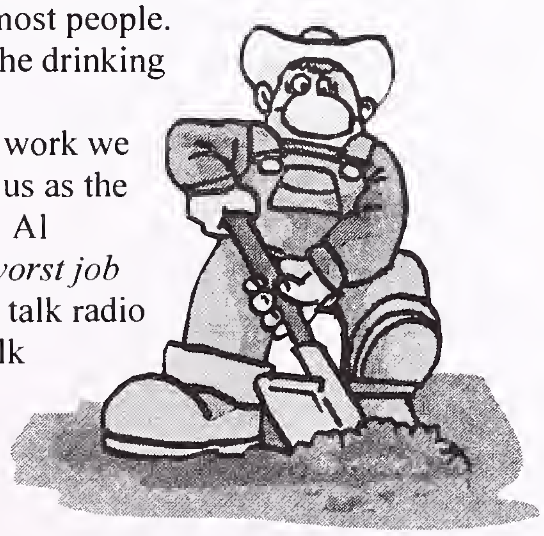
Doesn't it seem odd that we volunteer for years to reach the leadership position and then we're called a piece of furniture? Keeps one humble when you think about what sits on that furniture!! Obviously we're not doing this for fame or fortune.

So why am I doing this? For me, the driving force is public health. Though I am an engineer by training, I'm a protector of public health at heart. One only has to think of the tragic deaths and illnesses caused by the E.coli contamination of the water supply at Walkerton, Ontario to know the incredible importance of what we do to protect public health.

But sometimes we get caught up in the *busyness* of our business and do lose sight of this. Our challenge is to remember public health as we get involved in the mechanics of source water delineation, preparing our latest Consumer Confidence Report, or flushing out lines. I really believe that the work of our profession is equally as important as the medical field. We may not make as much money as doctors, but we can still save those lives! What a great celebration of MSAWWA's 75th birthday we had in April. at the conference. Our annual joint conference with MWEA in Helena featured an awesome display of historic information, photos and artifacts assembled by Jim Melstad and the Historical Committee. Thanks to these folks for caring and taking the time to develop this display. It made this conference quite special. The evening entertainment by the Sludge Band was another highlight of the conference. Perhaps they'll do a repeat performance in Butte next year, so mark your calendars for April 18-20, 2001.

We elected a new board member in Helena: Doug Whitney from MSE-HKM in Billings is serving as our new Junior Trustee. Thanks, Doug, for your willingness and enthusiasm that you bring to this role. We look forward to your upcoming term on the Board for the next 5 years! (Yep, it really takes that long to morph to a chair.) We also had many members volunteer to serve on committees, but we are still looking for folks from the Butte area to help with the Host City Committee for the 2001 conference. Get in touch with me or Carolyn Chaussee if you can help.

WORST JOB ... ?



In the June 2000 *Water Environment Highlights*, WEF President Al Goodman relates some thoughts about how wastewater operators and professionals who work in and with wastewater treatment facilities are viewed by the general population. The Ed Norton character portrayed by Art Carney in "The Honeymooners" comes to mind as a humorous, but truthful, image to most people. Even our peers in the drinking water field, while appreciative of the work we do, tend to refer to us as the "dirty water" folks. Al mentions that the *worst job* issue came up on a talk radio program and the talk show hosts cast dispersions on the wastewater profession. No matter how we might wish it to be otherwise, our jobs are forever to be linked with what is flushed down the toilet.

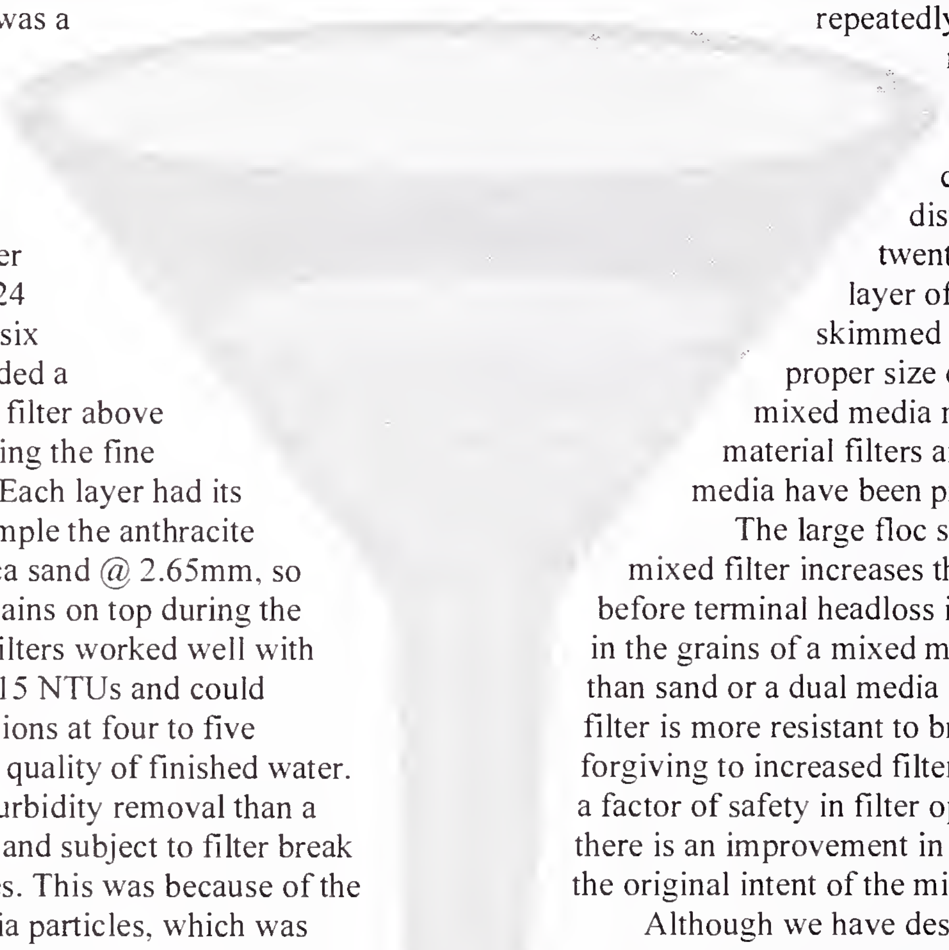
The irony is ... as Al puts it ... that the work we do in the facilities protects the public health and the environment for all of us. We do need to continue to strive to improve the image of the wastewater professional. We are trained to understand complex treatment systems, safety conscious because of the dangers inherent in carrying out our duties, and often underpaid and not appreciated. Despite being the "butt" of many jokes, we continue to go to our jobs and do the best job we can do. How do we improve the image of the wastewater worker? Keep on trying. Keep on making our plants clean and safe. Keep on optimizing treatment in our plants. Keep on trucking. In truth, our plants and our jobs are clean water jobs and facilities. We take some very polluted water and turn it into clean water that is safe for the environment, safe for irrigation and safe for drinking water plants to turn into safe drinking water. Thanks to all you *clean water* professionals.

Critical Filter Media Development & Specifications

by Rick Cottingham, Water Quality Specialist

Recently several Montana water treatment plants installed, or were about to install, the wrong size of anthracite coal media in their filters. The filters were replaced due to the normal loss of filter media from backwashes. This critical issue needs further explanation on the importance of ordering the correct filter media according to design standards or specifications.

Operators need to perform maintenance in their filter beds by periodically measuring the depth of their filters by checking their as-built plans or the plan and specification manual. The loss of filter media can result in shortened filter runs, less turbidity removal, more frequent backwashes and, therefore, less efficient operation of the filter. Installing the wrong size filter media can further result in particulate removal problems in the filtration barrier treatment process.



In the mid-1940s there was a wartime need to produce an improved water quality for processing wartime materials. Development of the coarse to fine filter took place in two steps. First a filter was the developed that used 24 inches of anthracite coal and six inches of silica sand. It provided a necessary coarse or roughing filter above to trap particulate from reaching the fine finishing filter media below. Each layer had its own specific gravity, for example the anthracite coal was 1.4 mm and the silica sand @ 2.65mm, so the coal at its proper size remains on top during the backwash procedure. These filters worked well with raw waster turbidities below 15 NTUs and could operate under constant conditions at four to five gpm/sq ft and produce a high quality of finished water. These filters provided more turbidity removal than a sand filter, but were unstable and subject to filter break through at changing flow rates. This was because of the low total surface area of media particles, which was much lower than conventional sand filters of today.

Today's filters have a controlled mixing of media at the interface that performs and washes better than the beds of distinct layers like the dual media of the past. The dual media are designed today to have the coal as coarse as is consistent with particulate removal to prevent surface binding and to have the sand layer as fine as possible for maximum removal of solids. If the sand were too fine, it would rise above the coal in the backwash and remain there after the filter is returned to service. The only way to use fine silica sand in the bottom layer would be to use a smaller diameter coal, which would defeat the purpose and most likely cause surface binding. The problem of keeping fine media at the bottom was overcome by using a third very fine heavy material, usually garnet, beneath the coal and sand. The garnet sand and coal particles are sized so controlled mixing occurs and no distinct interface exists between them. This sets up the necessary uniform decrease in pore space size with the increase in filter media depth.

The term "coarse to fine" actually refers then to the pore spaces rather than the media themselves. This uniform decrease in pore size with filter media depth allows the entire filter bed to be used for floc removal and storage until the next backwash. This also allows for steadily increasing efficiency of removal in the direction of flow. Some filters are further designed to add an additional layer of lighter weight coal in addition to the normal coal-sand-garnet, thus making it possible to increase the top media without changing the size of the rest of the filter.

One of the key factors in constructing such a mixed-media bed filter is careful control of the nominal size distribution of each layer of media. Backwashing repeatedly, until the fines are removed after installation of each layer of material is essential to achieve this critical pore size distribution. Sometimes twenty to thirty percent of each layer of material might have to be skimmed and discarded to achieve proper size distribution. The benefits of mixed media material over dual media material filters are only relized if the mixed media have been properly sized.

The large floc storage capacity of the mixed filter increases the length of the filter runs before terminal headloss is reached. The surface area in the grains of a mixed media filter bed is larger than sand or a dual media filter. The mixed media filter is more resistant to breakthrough and more forgiving to increased filter flow rates. This provides a factor of safety in filter operation. At the same time, there is an improvement in the finished water quality, the original intent of the mixed media filter design.

Although we have designed a better filter, it still is only one factor in the multi-barrier concept. Chemical dosages for optimum filtration, rather than maximum settling, as well as other variables are much more important than filtration rate in the current "Move to Improve" water treatment environment. Coagulation and filtration are inseparable.

When replacing media or changing out aged filter media, it is very important to correctly order the media specified and confirm that you have received the proper sized media. Make certain that the media you order is what is delivered before installing and that you follow manufacturer procedures. If in doubt, call the manufacturer, your design engineer, or the DEQ Public Water Supply Program at 444-4400.

Upcoming EPA Rules

The Environmental Protection Agency (EPA) has seven proposed rules, with each rule on a different time schedule. These rules are a result of the 1996 Safe Drinking Water Act Amendments. This article will address four of these rules: Radon Rule, Arsenic Rule, Radionuclides Notice of Data Availability, and Groundwater Rule.

RADON RULE

The intent of this rule is to regulate radon in water and air, with emphasis on mitigating indoor radon levels in new and existing homes through a Multimedia Mitigation (MMM) program. EPA is proposing a maximum contaminant level (MCL) in drinking water of 300 pico Curies per liter (pCi/L) and an alternative MCL (AMCL) of 4,000 pCi/L if the state or community water system implements an MMM program. The Montana Bureau of Mines and Geology sampled 283 groundwater wells in Montana in 1995 and 77 percent of these wells had radon levels in excess of 300 pCi/L, the proposed MCL for radon in drinking water. Therefore, this rule will impact many of Montana's water systems.

Breathing radon in indoor air is the primary public health risk from radon, contributing to about 20,000 lung cancer deaths each year in the United States, according to a report this year by the National Academy of Sciences (NAS). Radon is the second leading cause of lung cancer in the United States. Based on a NAS study, EPA estimates that radon in drinking water causes about 168 cancer deaths per year: 89 percent from lung cancer caused by breathing radon released from water and 11 percent from stomach cancer caused by drinking water with radon.

The proposed standards only apply to community systems that use groundwater or a mixture of ground and surface water. However, EPA may apply the standards to non-transient non-community systems and has requested comments on this part of the rule. The proposed rule will provide states the flexibility in how to limit exposure to radon by allowing them to focus their efforts on the greatest radon risks, those from indoor air, while also reducing the risks from radon in drinking water. EPA has proposed these two options for the states to address radon:

1. Community water systems will be required to meet the MCL of 300 pCi/L at the entry point. If the drinking water exceeds the 300 pCi/L, then the system must provide treatment. Small systems (less than 10,000 people) can use point-of-entry devices, but larger systems must install treatment at the source. The best available technology is aeration for removal of radon in drinking water.

or

2. Community water systems will be required to meet the AMCL of 4,000 pCi/L at the entry point if the state implements an MMM program to address the health risks from radon in indoor air. EPA is encouraging states to adopt this option because it is the most cost-effective way to achieve the greatest radon risk reduction. If the state chooses not to develop an MMM program, the community water system could choose to develop its own MMM program and meet the AMCL of 4,000 pCi/L.

EPA is requiring the following items before it will approve the state's MMM program:

1. Public involvement in the development of the MMM plan
2. Quantitative goals for reducing radon in existing and new homes
3. Strategies for achieving these quantitative goals
4. A plan for tracking and reporting results

If a community system develops its own MMM program, the state will be responsible for reviewing and approving the local MMM program.

The Department has provided comments to EPA on the rule, stating that it would be difficult to develop and implement an MMM program because EPA will not provide additional funding. The Public Water Supply Section has copies of the rule and fact sheets regarding radon in air and water. The rule is also on EPA's web site, www.epa.gov/safewater/radon/radfr1.html EPA had proposed to finalize the Radon Rule by August, 2000, but there is a chance the final rule may be delayed.

ARSENIC RULE

The Arsenic Rule is out for review and can be viewed at www.epa.gov/safewater/ars/proposals.html). This rule proposes to lower the arsenic standard from 50 parts per billion (ppb) to 5 ppb to more adequately protect public health. EPA is also proposing other MCLs of 3 ppb, 10 ppb, and 20 ppb. If EPA determines that the technically feasible level does not justify the costs, it can adjust the standards to a level "that maximizes health risk reduction

(Continued on next page)

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benefits at a cost that is justified by the benefits". EPA has been asked to justify the MCL of 5 ppb. Some organizations think 5 ppb is too high while other organizations think 5 ppb is too low for this MCL.*)* EPA needs to better identify the health risks associated with the proposed MCLs and the cost for arsenic removal.

The costs EPA that presents in the rule are questionable. These costs do not accurately represent disposal of arsenic residuals and/or waste streams. Approximately 15% of the community systems in the state will be affected if the MCL is set at 5 ppb. Point-of-Use and Point-of-Entry systems are allowed for arsenic removal. The most common technologies used for arsenic removal are ion exchange, reverse osmosis, and activated alumina. Depending on the amount of arsenic removed, the residual or waste stream produced through the treatment process may be classified as hazardous waste and subject to another set of rules. Comments on the Arsenic Rule are due to EPA by September 20, 2000.

RADIONUCLIDES

EPA's Radionuclide Notice of Data Availability (NODA) proposes the following:

1. Radium-226 and Radium-228 should be monitored separately as opposed to the current method of combining Radium-226 and Radium-228.
2. Uranium should be monitored with the MCL proposed at 20, 40 or 80 ppb.
3. All radionuclides should be monitored at the entry point, as opposed to the current method of sampling within the distribution system.
4. Non-transient non-community (NTNC) systems should be regulated for radionuclides.

Comments on the Radionuclides NODA were due June 20, 2000. The Department provided the following comments: uranium should be regulated at 40 ppb; EPA should address the cost of disposal of radioactive material as a result of treatment; and the state should have discretion on the amount of monitoring required for NTNC systems. The Department does not have data on the amount of uranium in drinking water, so it is difficult to predict the impacts of this rule.

GROUNDWATER RULE

EPA also has the Groundwater Rule available for review and comment. Comments were due August 9, 2000. This rule will require disinfection of groundwater systems that are determined to be vulnerable to contamination. This determination would be made through a combination of hydrogeologic sensitivity assessments of the source water, sanitary surveys and results of samples taken from systems. The rule can be viewed at EPA's website (http://www.epa.gov/safewater/gwr.html).

SUMMARY

One, if not more, of the four rules just presented will affect almost every system in the state. As an owner or operator of a system, you should keep in mind that if treatment is required for the Arsenic, Radon, or Radionuclide Rules, then disinfection will also be required. Depending on the type of disinfection used, your system could also be subject to the Disinfectants/Disinfection By-products Rule, which will require monitoring of disinfection by-products and additional treatment for reducing disinfection by-products in the system. The cost of installing treatment to address any of the rules will be high and, in some cases, very difficult to fund. Systems will be forced to increase rates and operators will be faced with operating some very complicated systems.

The Department will keep you informed of the status of the rules. Please call the Public Water Supply Section at 444-4400 if you have questions

MRWS and the Source Water Protection Program

The Source Water Protection Program at DEQ has developed an agreement with MRWS to work together to complete the delineation and assessment reports for small Community PWS in Montana. Under the new arrangement, DEQ will update the existing Wellhead Protection Plans prepared by MRWS by adding the required susceptibility assessments and preparing additional graphics to support the Source Water Protection Plans. For communities that already have Wellhead Protection Plans prepared by MRWS, please contact DEQ - Source Water Protection Program (444-6697) to arrange updating the plans to meet the current program requirements. MRWS will continue to work with your system to help complete the Source Water Protection Planning process. For PWSs that have worked with MRWS to complete some initial steps to the process, but have not submitted anything for certification, this should be indicated when contacted regarding implementation of the Source Water Program at these specific PWSs. DEQ will contact MRWS to develop the best approach for completion of the reports for these systems. Remember, DEQ is responsible for getting ***certified*** plans for all PWSs in Montana. Operators should contact DEQ or MRWS with any questions regarding this arrangement.

Source Water Protection Program on Indian Reservations

The 1996 Amendments to the Safe Drinking Water Act require each state to develop and implement a Source Water Protection Program for all regulated public water supplies. In some cases, this includes PWSs located within the external boundaries of Indian Reservations. From the Safe Drinking Water Act each reservation is responsible for the Source Water Program at tribally maintained systems. The Montana Source Water Protection Program has begun the process of completing delineation and assessment reports for several DEQ regulated PWSs located within reservation boundaries. The operators of any such PWSs are encouraged to work with DEQ to complete the assessments on their systems. The main area of cooperation involves working with tribal government officials to find information that is not included with the DEQ databases. This includes information such as the location of wells and the nature of businesses and activities that may represent ***potential*** contaminant sources. Under these circumstances, the operators can act as an informal liaison between DEQ and the respective tribal government with a goal of enhancing the completeness of the reports. As a courtesy, DEQ will notify tribal governments when Source Water Protection activities will be occurring on specific reservations. DEQ will also provide courtesy copies of completed delineation and assessment reports to the tribal governments.

Free Guide For Small Town And Rural Source Protection

SOURCE 2000: Funding and Assistance Programs to Protect Small Town and Rural Drinking Water is now available at no cost from The National Center for Small Communities (NCSC). This guide, mainly directed towards local officials, aims to educate, define and describe small town and rural county source protection opportunities, and presents a strategy for gaining support for drinking water protection in small towns.

Source Water 2000 can be ordered directly on the NCSC website at http://www.matat.org/NCSC/Pubs/Environment.htm or you can fax/mail in an order form.

NCSC is the only national, non-profit organization devoted exclusively to serving the leaders of America's smaller communities. The mission of the NCSC is to provide decision-makers with the tools to govern effectively and the skills to expand local economies, protect natural resource and preserve community character. For more information about NCSC go to http://www.natat.org/NCSC/

WATER & WASTEWATER OPERATOR CERTIFICATION NEWS

by Shirley Quick, Certification Officer

EXAM DEADLINES

If you are thinking about getting another operator certified in the future, please note the following information to help ensure that they meet the deadlines.

1. Call and request an application from Reta Therriault (444-3434) at least 3 months in advance. This will give your new operator plenty of time to study and sign up for a convenient exam site. If the operator has completed an application within the last year, it may still be valid but they may owe an additional exam fee.
2. Have your new operator complete the application and send it to the certification office with the application and exam fees (see #5 below.)
3. Have the new operator complete and send in an exam notice by the deadline to inform us of when he/she will be taking the exam.
4. Complete steps 1-3 before the exam deadline. The deadline for exams is always 15 days before the exam date. (**The fall exam is September 29 and the deadline is September 14, 2000.**)
5. Application and exam fees are now $70 each as of January 15, 2000. For example, to take a Class 5AB water exam and a Class 4C wastewater exam, it will cost a total of $280 ($70 water application, $70 exam (5AB), $70 wastewater application, and $70 exam (4C) fees.)

ON CALL OR ON SITE?

Several operators and system owners have called the certification office over the past few weeks asking for clarification on the "on call" or "on site" coverage that our rules require. The following is to help everyone understand the department's interpretation of these rules:

Section 17.40.208, Administrative Rules of Montana states in part: "(1) Every water or waste water system must have an individual in responsible charge at the system site or on call at all times who can respond in a timely manner to threats to public or environmental health. (2) Except as provided in this rule, the individual in responsible charge of a system must be a fully certified operator for that class or a higher class of system."

The department interprets this rule to mean that a fully certified operator must be in charge of the system and readily available to make any process control decisions whether that operator is at the plant or on call.

Keep in mind that public water supplies are also now required to meet U.S. Environmental Protection Agency (EPA) certification requirements as outlined in the EPA operator certification guidelines. The EPA guidelines require that a certified operator be available for all operating shifts. The EPA guidelines define **operating shift** as the period of time during which operator decisions that affect public health are necessary for proper operation of the system.

EPA also requires that all community and nontransient noncommunity systems be under the responsible charge of a certified operator. They define the person in **responsible charge** as the certified operator(s), designated by the owner, who makes decisions regarding the daily operational activities of a public water system, water treatment facility and/or distribution system, that will directly impact the quality and/or quantity of drinking water.

In other words, every community and nontransient noncommunity system must have a fully certified operator making all process control decisions. For all systems there must be a fully certified operator on call 24 hours a day, seven days a week. An operator-in-training may be left alone during an operating shift, but a fully certified operator must be on call to make any process control decisions. Questions? Call Shirley at 444-2691.

ADVISORY COUNCIL CHANGES

On December 22, 1999, the governor's office appointed **Roger Thomas**, City of Billings wastewater plant supervisor, to fill the remainder of Mike Holzwarth's term on the Water and Wastewater Operators Advisory Council.

Roger started working for the City of Billings, Public Utilities Department in April 1975 at the wastewater treatment plant. The wastewater plant was only a primary treatment facility when he started, but it was in the construction stages of building the porteous and secondary treatment portions of the plant. In 1985 a digester replaced the porteous treatment. Roger became a certified operator for wastewater in 1982 and for water in 1983. During his tenure with the city, he helped develop and implement the maintenance programs and the SCADA system used for process control, monitoring, recording data and historical files.

Roger was born and raised in Montana. Roger's brother, Ron Thomas, is director of public works for the City of Big Timber. Roger's expertise in wastewater will be very helpful in the development of the new wastewater exams that the certification office will begin this year. **Welcome, Roger!**

EXAM RESULTS

Just a reminder that exam results are sent out the day of the Council meeting that follows the exam (usually 6 weeks.) Although we understand how anxious exam takers after the exam, results are not given out over the phone. This is to protect your privacy as well as to give the certification staff enough time to process the exams and have the Council approve all exam results.

The good news is that the certification office is in the process of upgrading its database to a system that will greatly speed up the exam process. After the system is up and running, we hope to be able to get the results out to operators much quicker. Unfortunately, the new system will probably not be fully operational until the March 2001 exam.

CERTIFICATION PROGRAM APPROVAL

To meet the Safe Drinking Water Act requirements, all states must submit final operator certification program approval requests to EPA by February 2001. Montana submitted their draft program approval request to EPA Region 8 in October 1999. We received verbal comments on the draft during conference calls with EPA in February and April 2000, during which, EPA had several comments on Montana's certification program. As of **August 2000**, Montana is still negotiating approval of the following issue with EPA:

Not requiring Class 5AB operators (serving 25-100 people) to meet an experience requirement to get fully certified.

Their reasoning: EPA guidelines require experience for all classifications of systems.
Montana's response: Class 5AB operators have spent a great deal of time studying to pass exam and we feel that time should be considered to be "experience." Finding someone willing to be an operator for a Class 5AB system **AND** who has any experience is virtually impossible. Class 5AB operators do not have as many duties or responsibilities.

EPA has formally approved the following:

Allowing systems that cannot find a fully certified operator to request temporary certifications for noncertified operators.

Their reasoning: EPA guidelines require operator in responsible charge to pass an exam first.
Montana's response: Approving a temporary certification allows the system time to get its applicant certified. Approving a temporary certification for a system that has met the rule requirements is better than having no operator at all. The system owner formally designates the temporary operator with the department. It is usually small rural systems that request temporary certification because they have a hard enough time finding someone who agrees to take an exam, much less someone who is already certified.

All states must submit their final approval requests to EPA by February 2001, then EPA must review them by August 2001. We hope to have our final approval in by the end of August 2000 and approved by no later than December 2000. Keep your fingers crossed!

If you have any questions or would like to know how to contact EPA directly on these issues, please call Shirley at 406-444-2691.

MRWS Friends of Rural Water Award Winner

Shirley Quick (l) accepts the Friends of Rural Water Award from **Dave Jones**, Montana Rural Water Systems president, at the 21st Annual MRWS Conference awards luncheon February 25, 2000.

Rory Schmidt, MRWS program specialist, stated when he presented the award that the Friends of Rural Water Awards are given to individuals outside of the organization who have made outstanding contributions to the program and to the people who are served.

"This year we have selected a person who has been working in the state government for the past 17 years. Most of us have known her for the past seven years of outstanding dedication, support, and management of the best operator certification program in the nation! Don't just take our word for it; Shirley recently accepted the Association of Boards of Certification's National Certification Program Award for her outstanding contribution towards establishing or advancing certification," said Rory.

"Today she is responsible for the certification and the CECs for over 1600 operators. Along with two other staff members, Shirley strives to build the water and wastewater operator profession instead of simply forcing regulations upon the public!"

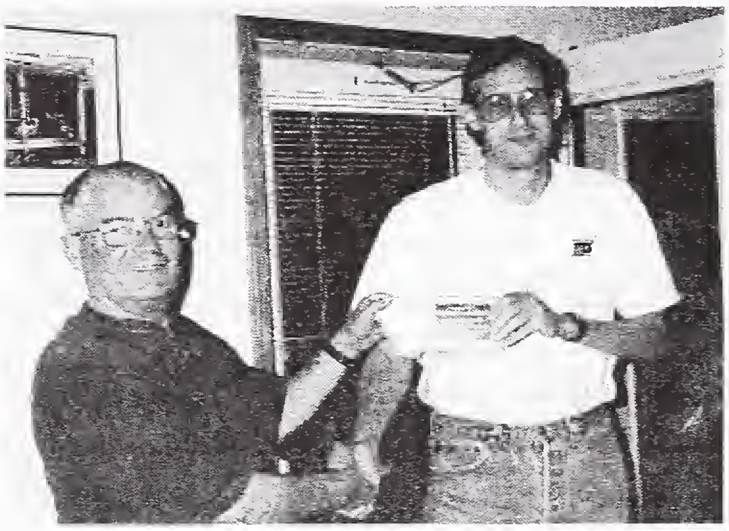
"MRWS is happy to award the Friends of Rural Water Award to Shirley Quick with the Montana Department of Environmental Quality Water & Wastewater Operator Certification Program."

Barb Coffman Recognized For Service To METC

Barb Coffman received a plaque in recognition of her hard work on the operator certification Continuing Education Credit Review Committee. Barb worked as a training and development specialist for the Montana Environmental Training Center for six years from May 1994 to May 2000 and as an intern for METC for four years while a student at MSU-Northern.

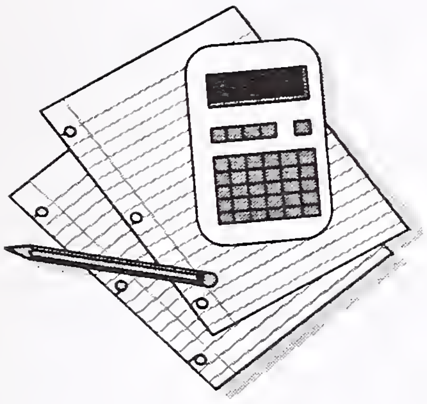
We all wish Barb the best of luck at her new job as a reclamation specialist with the Montana Salinity Control Association in Conrad. Barb will be traveling state-wide developing saline seep areas into useful land by helping to drill monitoring wells, conducting soil and water analysis, and suggesting forage crops. Barb's dedication to training Montana's certified operators and protecting the environment will not easily be replaced.

The good news for Barb is she will be living in Brady in a house that was her grandmother's near her sister's and parent's. The bad news for the rest of us is that we won't see Barb's smiling face at the METC's training sessions anymore. We'll miss you, Barb!



Mike Holzwarth Receives Award

Lee Leivo (l), Water & Wastewater Operators Advisory Council chairperson, presents **Mike Holzwarth (r)** with a plaque thanking him for 10 years of service on the council as the representative for Class 1C wastewater operators. Mike resigned his position on the council to accept a position for the environmental division of the new PP&L power company in Colstrip. Thanks, Mike!



MATH REVIEW FOR CERTIFICATION EXAM

Montana State University
Strand Student Union Building
Bozeman, MT
September 28, 2000
Thursday 1:15-4:30

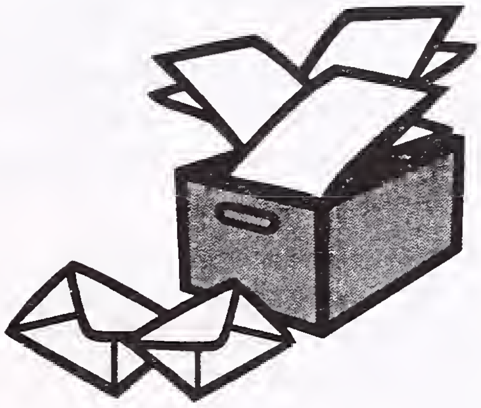
This session is intended to review basic math for those who have applied to take examinations for certification on Friday, September 29, 2000. You will never learn everything you need to know at a water school to pass the exam OR to be a competent operator. The study materials we provide and suggest are designed for home study.

Additionally, during the Water School in Bozeman, September 25-28, 2000 there will be sessions covering basic material related to water and wastewater treatment. The sessions are organized to cover treatment-related math and concepts. Training staff will be available each day to help answer questions you may have from your self-study, and to give you an overview of information. Contact MSU at 994-6683 to receive registration information.

Since these water school sessions are designed for entry-level operators who don't need continuing education credits (CEC's), no CEC's will be given for Thursday afternoon or the basic track sessions during water school.

The Department will make reasonable accommodations for persons with disabilities who wish to participate in this training. If you require an accommodation, contact the Department in writing no later than one week before the training to advise us of the nature of the accommodation needed. Please contact the Department at PO Box 200901, Helena, Montana, 50620-0901.

For more information, call Reta Therriault, DEQ Water/Wastewater Operator Certification Office at 406/444-3434.



CEC NAGGINGS

(THAT YOU MAYBE SHOULDN'T IGNORE)

CONGRATULATIONS to all operators who got re-certified by getting their continuing education credits (CEC's) and renewals fees in by June 30, 2000.

Now it's time to start over again and why not earn your credits early so you don't have to rush at the end. There are lots of fun and exciting ways to get your credits. These include attending any approved courses (the METC 2000 calendar lists courses from lists of training providers, so check out the ones from July through December). You can complete an approved correspondence course (these are also listed in the METC calendar), or find your own class and apply to have it approved for credit. There are also some new ways to earn credits: Internet and CD-Rom courses. Remember that operators-in-training are not required to earn CEC's.

If there are any problems on your CEC status or you need information on any of the training options, simply contact Ashley Finnegan, Water/Wastewater Operator Certification Office clerk at (406) 444-4584. Hope to see your credit forms come across Ashley's desk soon!

Tentative Agenda: 67th Annual Fall Water School and Certification Examinations

September 25-29, 2000 in the Strand Union Building at MSU-Bozeman
For Registration Information call 994-6683

MONDAY, 9/25/2000
BALLROOM A (8:30-11:30)
OPENING:
Introductions; Operator Certification Updates; Public Health; Communicating With Community Leaders
BALLROOM D (10:30-11:30)
BASIC TRACK:
Operator Certification Q & A
LUNCH
BALLROOM A (1:00-3:00)
Rules Update & Funding: Radon Funding; Arsenic; Capacity Development; Public Notice; LT 1 & 2; Ground Water Rule
ROOMS 275/276 (1:00-3:00)
Wastewater Treatment Systems in Montana
BALLROOM D(1:00-3:00)
BASIC TRACK:
Technical Terminology

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TUESDAY, 9/26/2000
BALLROOM B (8:00-12:00)
Surface Water Treatment
BALLROOM C (8:00-12:00)
Groundwater/Distribution:
Understanding Your Distribution Map; UV Disinfection; Storage Tanks
ROOM 275/276 (8:00-12:00)
Wastewater Microbiology & Laboratory
BALLROOM D (8:00-12:00)
BASIC TRACK:
Formulas; Volume & Area; Hydraulics
LUNCH
BALLROOM B (1:00-5:00)
Surface Water Treatment
BALLROOM C (1:00-5:00)
Groundwater: Source Water & Potential Threats; Source Water Protection; Obtaining Source Water Information on the Web
ROOM 275/276 (1:00-3:00)
Wastewater Collection Systems; Lift Stations
BALLROOM D (1:00-5:00)
BASIC TRACK:
Concentrations & Dosages; Loading Rates; Lagoon Systems
BOZEMAN WWTP (3:15-5:00)
On-Site Experience
ROOM 275/276 (3:15-4:15)
Force Main Transient Wave Analysis for Roberts

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WEDNESDAY, 9/27/2000
BALLROOM B (8:00-12:00)
Surface Water Treatment
BOZEMAN Distribution O&M Center (7:45-10:00)
On-Site Experience
ROOM 275 (8:00-10:00)
Groundwater: GWDBP; Enforcement Actions
ROOM 276 (8:00-12:00)
Wastewater: Industrial Treatment; Biosolids Management
BALLROOM C (10:15-12:00)
Groundwater/Distribution:
Sampling Instructions
BALLROOM D (8:00-10:00)
BASIC TRACK:
Class 1C/2C Wastewater
BALLROOM D (10:15-12:00)
BASIC TRACK:
Groundwater Systems
LUNCH
BALLROOM B (1:00-3:00)
Water Treatment: Ballast Sand Pre-Treatment; Billings Filter Membrane Pilot Study
BALLROOM C (1:00-5:00)
Groundwater/Distribution: Cross Connections; Coliform Rule
ROOM 276 (1:00-5:00)
Wastewater: Innovative Treatment Solutions; Roundup Lagoon System; MPDES Permits; Enforcement Issues
BOZEMAN Water Treatment Plant (3:15-5:00)
On-Site Experience
BALLROOM D (1:00-5:00)
BASIC TRACK:
Distribution Systems; Surface Water Treatment Rule/Jar Testing

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THURSDAY, 9/28/2000
BALLROOM B (8:00-10:00)
Large & Small Systems: General Safety Programs
BALLROOM C (8:00-10:00)
Surface Water Systems: Overview Disinfection Byproducts
BALLROOM D (8:00-10:00)
BASIC TRACK:
Coliform, Sampling, & Public Notice
BALLROOMS B/C (10:15-11:45)
All Systems: Emergency Planning
BALLROOMS B/C (11:45-12:00)
WRAP-UP:
School Evaluations & Closing Comments
ADJOURN

****

THURSDAY, 9/28/2000
CERTFICATION EXAMINATION PREPARATION SESSIONS
ROOM 275 (1:15-4:30)
Water Treatment & Distribution Review - General
ROOM 276 (1:15-4:30)
Wastewater Treatment Review - General

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FRIDAY, 9/29/ 2000
BALLROOMS B/C (8:00-12:30)
REGISTRATION: 8:00-8:30am
CERTIFICATION EXAMS: 8:30am-12:30pm
See page 17 for information.

Fall Examinations!

Fall Water & Wastewater Exams

Friday, September 29, 2000

MSU-Strand Union Building, Bozeman

Registration @ 8:00 a.m. Examination Period: 8:30 a.m. – 12:30 p.m.

NOTE, THERE WILL BE NO EXCEPTIONS TO THIS:

By SEPTEMBER 14, 2000, as required by ARM 17.40.208, everyone taking examinations must have sent in the following:

1. Completed application for certification as a water and/or wastewater operator;
2. Paid application fee of $70.00 per water and/or $70.00 per wastewater; and
3. Registration slip and fee of **$70.00 per** examination.
   (Combination exams **2A3B, 3A4B, 4AB and 5AB require $70.00 examination fee only**.)

To request application materials or to ask for additional information, call the certification office at 444-3434 for Reta Therriault, 444-4584 for Ashley Finnegan or write to:

Department of Environmental Quality
Water and Wastewater Operator Certification
PO Box 200901
Helena MT 59620-0901

✂ ……………………………………………

Fall Water & Wastewater Exams

Friday, September 29, 2000

MSU-Strand Union Building, Bozeman

Registration @ 8:00 a.m. Examination Period: 8:30 a.m. – 12:30 p.m.

Water & Wastewater Operator Certification

To register for an exam, detach and return this slip with appropriate fees by September 14, 2000

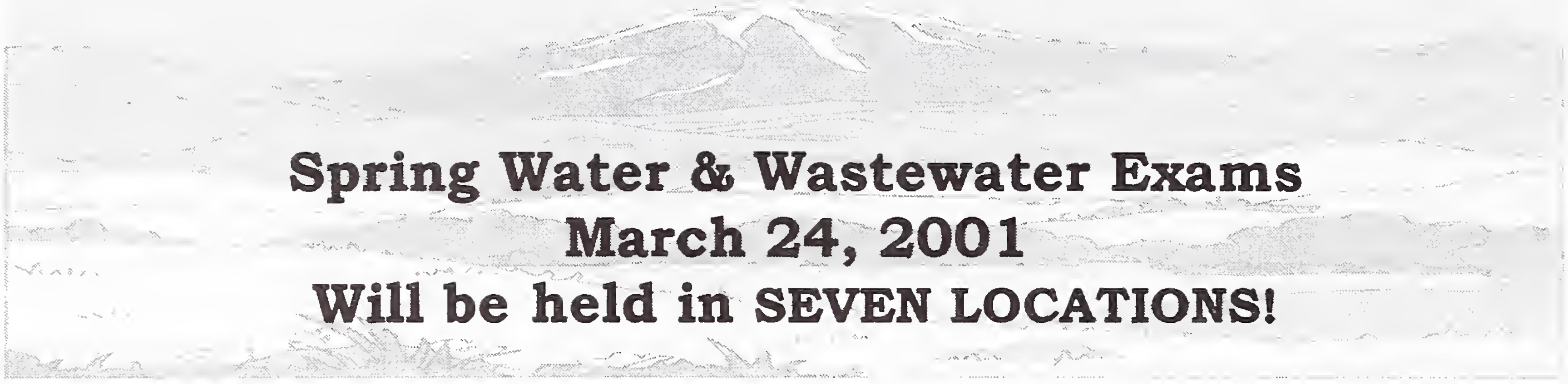
	1	2	3	4	5
A – Water Distribution	___	___	___	___	___
B – Water Treatment	___	___	___	___	___
C – Wastewater Treatment	___	___	___	___	

Name: ______________________________

Operator #: __________

System Name:
____

Don't Forget!



Spring Water & Wastewater Exams
March 24, 2001
Will be held in SEVEN LOCATIONS!

To receive application information, call Reta Therriault at (406) 444-3434
Or return the bottom of this page to:

Department of Environmental Quality

Water and Wastewater Operator Certification
PO Box 200901
Helena, MT 59620-0901

Water and Wastewater Operator Certification

Please send me an application package for the following exam:

☐Billings ☐Great Falls ☐Havre ☐Helena ☐Kalispell ☐Miles City ☐Missoula

	1	2	3	4	5
A - Water Distribution	_	_	_	_	_
B - Water Treatment	_	_	_	_	_
C - Wastewater Treatment	_	_	_	_	

Name: ______________________________ Operator #: _______

System Name: ______________________________

Mailing Address: ______________________________

City/ State/ Zip: ______________________________

APPLICANTS PASSING EXAMINATIONS FOR FULL CERTIFICATION OR OPERATOR-IN-TRAINING
2000 SPRING WATER SCHOOL
2000 MRWS CONFERENCE
OFFICE EXAMS

NAME	CITY	CLASS 1's
BRIST, Tony	Olney	1C – OT
BURCH, Charles Jr.	Ft. Peck	1B – Full
DAHLMAN, Robert	Butte	1A – OT
HARMONING, Henry	Billings	1B – Full
KLEINSASSER, John	Chester	1B – Full
KULCZYK, Ann	Havre	1B – OT
LUSE, Brenda	Havre	1B – OT
MONSON, Dirk	Glasgow	1B – OT
PENTECOST, Jean	Butte	1A – Full
PERING, Scott	Miles City	1A – Full
RODELL, Leonard	Miles City	1A – Full
SCHROEDER, Jeffery	Bozeman	1A – OT
SHIELDS, Roger	Butte	1B – OT
SVEJKOVSKY, Rick	Butte	1A – Full
THOMAS, William	Havre	1A & 1B – OT
WEISSER, Rick	Bozeman	1B – OT
WHITE, Scott	Billings	1A - Full

NAME	CITY	CLASS 2's
CORPRON, William	Kalispell	2A – Full
DuBEAU, Larry	Nashua	2B – Full
DuBOSE, Joel	Pinesdale	2B – Full
HORSWILL, Galen	Deer Lodge	2A3B – Full
LENTZ, James	East Helena	2C – OT
SHACKLEFORD, Rob	Bozeman	2C – Full
SHIELDS, Bryan	Helena	2C – Full
WILLIAMS, Lawrence	Ft Smith	2C – Full
WOODS, Ira	Columbia Falls	2A3B – Full
WYCOFF, Larry	Helena	2C - Full

NAME	CITY	CLASS 3's
APPEL, Gerald	Lakeside	3A4B – OT
CLARY, Mark	Ronan	3C – Full
DOUBEK, Glen	Libby	3C – Full
DuBOSE, Joel	Pinesdale	3A – Full
GAINAN, Walter	Pablo	3A4B – OT
KERUTIS, Brian	Swan Lake	3C – Full
KLEINSASSER, John	Chester	3C – Full
KLENISASSER, Steven	Valier	3C- Full
KRUGER, James	Kalispell	3A – OT
LAPINSKI, Tony	Superior	3A4B,3C – OT
MANN, Ralph	Wolf Point	3C – OT
PITTARD, Floyd	East Helena	3A4B – Full
RICE, Jim	East Helena	3C – OT
SHELDON, Glenn	Hot Springs	3A4B – OT
SPENCER, Julie	Bigfork	3A4B - OT

NAME	CITY	CLASS 4's
ANDREOLI, Donald	Great Falls	4A – Full
BEHNER, Michael	Bonner	4AB – OT
BENCIA-HENSEL, Julissa	Lolo	4AB – OT
BENZ, Edward	Kalispell	4AB – OT
BRAUN, Denise	W Glacier	4AB – OT
CROMPTON, Francis	Lakeside	4AB – OT
EDWARDS, Billy	Great Falls	4A – Full
GAUDET, Jennifer	Hamilton	4AB – OT
GORMAN, Scott	Nashua	4AB,4C – OT
GRANGER, Roger	W Glacier	4AB – Full
HOFER, John	Galata	4C – Full
KLEINSASSER, Joseph	Cut Bank	4C – Full
KOHUT, Mick	Helena	4AB – Full
LATRAY, Joe	Browning	4AB – Full
LELAND, Ryan	Missoula	4AB – OT
LIFE, Eugene	Miles City	4C – OT
LUCKE, John	E Glacier	4A – OT
McCARLEY, Robert	Helena	4AB – Full
McKEON, Brian	W Glacier	4AB – OT
McNEILEY, Michael	Fromberg	4AB – Full
PACE, Robert	Shelby	4AB – OT
SCHAAF, Leslie	Saco	4C – Full
SEVERE, Kevin	Lakeside	4AB – Full
SKARTVED, Loren	Shelby	4C – Full
SKILLINGS, Jerry	Libby	3C – OT
STAHL, Clarence	Lewistown	4C – Full
TJADEN, Donald	Lakeside	4AB – Full
TONER, Matt	Bozeman	4C – Full
TRUSTY, Lance	Custer	4AB – Full
WALDNER, Ben	Harlowton	4C – Full
WALDNER, David	Havre	4C – OT
WALDNER, George	Choteau	4AB – Full
WALDNER, Jacob	Havre	4C – OT
WALDNER, Joseph	Havre	4C – Full
WALKS, Thomas	Ft. Smith	4AB – OT
WALLEWEIN, Michael	Shelby	4AB – Full
WALTER, Joe	Stanford	4C – Full
WILKERSON, Glenn	Paradise	4AB – Full
WILLIAMS, Michael	Terry	4AB – OT
WINDOM, Tony	Great Falls	4A – Full
WIPF, Elian	White Sulphur Springs	4C – Full
WIPF, Timothy	Wolf Creek	4AB – Full
WIPF, Will	Harlowton	4C – Full
ZAHN, Richard	Twin Bridges	4C – Full
ZITZOW, Ron	Bozeman	4C - Full

NAME	CITY	CLASS 5's
ALLEN, Michael	Townsend	5AB
BEAUBIEN, Thomas	Bigfork	5AB
BUUS, Charles	Cameron	5AB
DAIISADEGHI, Mohammad	St. Regis	5AB
JENSEN, Larry	Ronan	5AB
KERUTIS, Brian	Bigfork	5AB
MacRAE, Douglas	Livingston	5AB
MANCORONAL, Jason	Dillon	5AB
STONE, Spencer	Bozeman	5AB

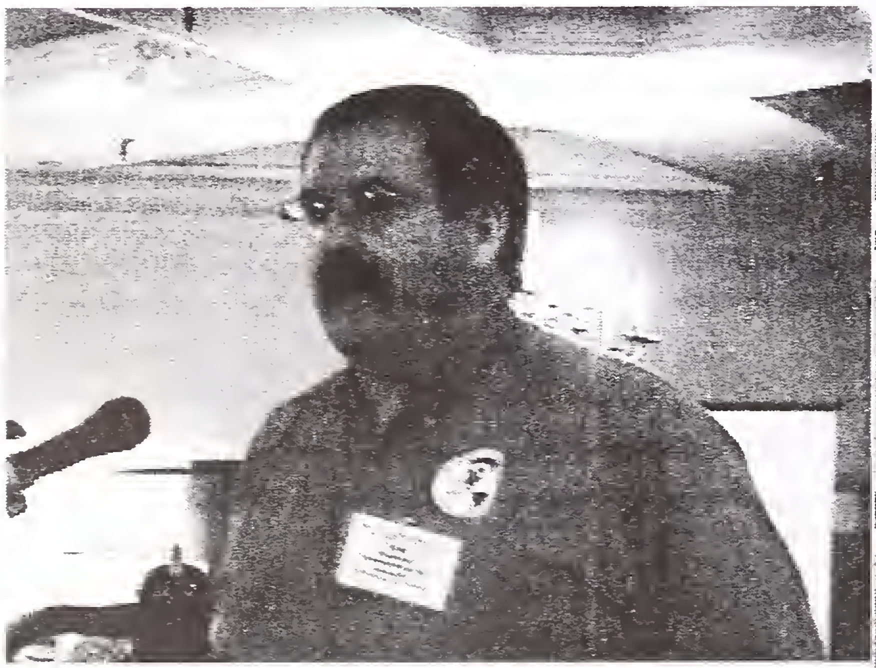
A = Water Distribution Operator
B = Water Treatment Operator
AB = Well Water System Operator
C = Wastewater System Operator
D = Industrial Wastewater System Operator
OT = Operator-In-Training

CONGRATULATIONS to all of the above operators who passed their examinations! The examinations require considerable time in study and preparation. Passing the examination represents hard work and initiative on the part of the individual. Be sure to show your appreciation to your water and wastewater operator for working hard to ensure that they are properly trained to care for your system.

MWEA & MSAWWA Annual Conference News

The 2000 Conference held in April in Helena was an unqualified success. We had about 190 folks who attended, including over 26 manufacturer representatives. Combined with the many technical sessions, there were plenty of opportunities to interact with fellow water and wastewater professionals from all areas of Montana (and a few from outside our boundaries). These two organizations serve as a focal point for those of us working in the public utility field. We strongly encourage fellow operators to join us as we organize public education activities, recognize quality operation, maintenance, engineering and management efforts with state and national awards, and plan for the future of water and wastewater systems.

Some of the awards presented this year went to the following:
WEF Hatfield Award - Joanne Emrick
AWWA Fuller Award - Terry Richmond
MWEA/MSAWWA Lifetime Achievement Awards:
Dr. Robert Sanks
John Morrison
Arthur Clarkson
Donald G. Willems
AWWA Operator's Meritorious Service Award - Dick Hoehne of Philipsburg
MWEA Small Systems - Beverly Pepos of Stockett
MWEA Biosolids - Lewistown
The Don Willems Scholarships:
Brenda Jo Luse, MSU-Northern
Kevin Colburn, University of Montana



Terry Richmond, Vice-President of Morrison-Maierle in Kalispell, is the 2000 AWWA Fuller Award winner.

WEF President Rhonda Harris, Texas, presents Joannie Emrick, Kalispell Advanced WWTP Manager, with the prestigious WEF William D. Hatfield Award.

Dr. Sanks shares a little wisdom with the audience, some of whom were his students at MSU.

Paul, Tim, Scott and Karen. The Golden Shovels were in fine form. The Beatles and Rolling Stones had better watch out!

Familiar faces in one of the many technical sessions. Bev, Dean, Kristi, Dana, Darrell, Starr, Todd and others.

A Call for Papers

"ROCKY MOUNTAIN WATER: KEEPING IT PURE"

The 2001 Joint Conference will be held in Butte at the Ramada Copper King from April 18-20. The Program Committee co-chairs, Karen Bucklin-Sanchez and Janet Cherry, would like the sessions to focus on technologies and techniques specific to water in the Rocky Mountain region and hope to attract speakers from this region. The technical program will be developed from both submitted and solicited papers with the theme focusing on "ROCKY MOUNTAIN WATER: KEEPING IT PURE".

Proposals should relate to water, wastewater or solid waste treatment; conservation; water distribution and wastewater collection systems; alternative treatment and disinfection; pilot studies; biosolids management; and other topics relevant to this region. Presentations are typically 30 minutes long. Written papers may be used to present more extensive and comprehensive topics. Papers will be chosen from abstracts or ideas submitted on or before October 31, 2000.

Abstracts should be no longer than 500 words (two pages, double-spaced) and include:

- **Speaker's name(s); Title of Paper; Coauthors; Affiliation**
- **Street address; City; State (or Province); Zip**
- **Daytime phone; Fax; e-ddress**
- **Audio/visual needs: Slide projector,Video,Overhead projector, PowerPoint projector, etc.**
- **Biographical information about presenter(s)**

If you do not want to present a paper, but are interested in a specific topic, please contact the Program Committee at the address below. You may also send copies of abstracts or written suggestions to:

MSAWWA/MWEA
505 South Roberts
Helena, MT 59601
(406) 443-5388
Fax (406) 443-5656
deanc94@aol.com

Using the World Wide Web to Solve Problems in our Systems

DEQ receives a multitude of requests for technical assistance, and most of the time, a reasonable solution is not too difficult to find. This past year, however, Dave Haverfield, Lolo WWTP Manager, came up with a head scratcher that nobody had a handle on. We accessed the Water Environment Federation (WEF) home page, **wef.org**, and posted a description of the Lolo WWTP conditions on the WEF Forums page. Several people replied, including Dr. David Jenkins of the University of California at Berkeley. He provided a good analysis of the situation as well as some options for Dave to use.

WEF, and the American Water Works Association (AWWA), have diverse and talented memberships. Together, these organizations have published some of the best technical manuals available on water and wastewater treatment. With the advent of the internet, we now have more immediate access to the best minds and troubleshooters in the industry. DEQ encourages operators and managers from water and wastewater systems and engineers working in the field to use WEF and AWWA as resources. AWWA can be accessed at **awwa.org**.

If you currently have some problems with your system that seem to defy logic and that you can't get answers to, consider these groups. You may be surprised.

Awards for the 2001 Conference in Butte

MWEA and MSAWWA will be selecting winners for a variety of awards to present at the Joint Annual Conference in Butte next year. Operators, engineers, managers, other water and wastewater professionals and/or systems will be eligible for these awards. The following is a partial list of the award categories:

- Safety Awards
- AWWA Fuller Award
- WEF Bedell Award
- MSAWWA and MWEA Small System Awards
- MWEA/MSAWWA Lifetime Achievement Awards
- MWEA Biosolids Award

If you wish information on nominating a person or system, or wish to apply for these awards, please contact Bill Bahr at 406-444-5337 about MWEA/WEF Awards and Carolyn Chaussee at 406-443-5388 about MSAWWA/AWWA or Joint Awards.

EPA 2001 OPERATIONS & MAINTENANCE (O&M) EXCELLENCE AWARDS

Montana wastewater treatment plants have been very successful over the years in the regional and national competition for the EPA O&M Excellence awards. The awards are presented each fall at the Water Environment Federation Technical (WEFTEC) conference. All wastewater treatment systems in the state are encouraged to contact Bill Bahr, the EPA O&M Award Manager for Montana, at 406-444-5337 for information about the awards program.

Past winners have included Chinook, Lakeside, Lewistown, Great Falls, Kalispell, Lolo, and others. This program is an excellent way to receive the recognition you or your peers deserve for hard work and innovation in solving problems while operating and maintaining your treatment facilities. The application process is not difficult and DEQ staff will assist you in filling out the application. Assistance is also available through Doris Roberts, EPA 104g Trainer from MSU-Northern, the Montana Rural Water System staff, and the Midwest Assistance Program.

MS/AWWA Safety and Heroism Awards Nominations

Each year the Montana Section of American Water Works Association seeks recipients for the MS/AWWA awards. The Safety Award goes to individuals or public utilities with established exceptional safety programs, or who have an existing program, which is continually updated and practiced. The Heroism award is presented to one or more system employees who have demonstrated an act of heroism in their community in the past three years.

If you would like to nominate an individual who qualifies for either award, please send your nominations and a one page description of their qualifications to Rick Cottingham or Tom Slovarp at the Department of Environmental Quality, 1520 E Sixth, PO Box 200901, Helena, MT 59620-0901.

5th Annual Missouri River Natural Resources Conference

2001: A Missouri River Odyssey

June 24-27
2001
Best Western Heritage Inn

Great Falls, Montana

Call for Presentations will be mailed in Fall, 2000

SPONSORS

American Rivers - Bureau of Land Management - Lewis and Clark Trail Heritage Foundation - Missouri River Citizens - Missouri River Natural Resources Committee - Montana Department of Fish, Wildlife, and Parks - PPL of Montana - US Environmental Protection Agency, Region 8 - US Geological Survey - Western Area Power Administration

To learn more about the upcoming Conference, contact:
Chris Hunter, Steering Committee Chairman
Montana Department of Fish, Wildlife and Parks
406-444-3183
chunter@state.mt.us

To have your name added to the mailing list, contact:
Jeanne Heuser
USGS Columbia Environmental Research Center
573-876-1876
jeanne_heuser@usgs.gov

Montana Department of
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